DOCUMENT RESUME

ED 161 378 HE 010 611

AUTHOR Hunter, Larry O.
TITLE A Method for Monitoring University Faculty Salary Policies for Sex Bias. AIR Forum Paper 1978.
PUB DATE May 78
NOTE 12p.; Paper presented at the annual Association for Institutional Research Forum (18th, Houston, Texas, May 21-25, 1978)

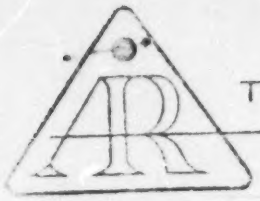
EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *College Faculty; Comparative Analysis; *Females; Higher Education; Institutional Research; Land Grant Universities; Measurement Techniques; Models; *Multiple Regression Analysis; Professors; *Salary Differentials; *Sex Discrimination; State Universities; *Teacher Salaries

ABSTRACT

Faculty salary differentials were analyzed using multiple linear regression. Data were used on all full-time academic faculty at a state university, a relatively small land grant institution. A model was developed using rank, time in current rank, highest degree, administrative position, and academic department as independent variables. The effect of sex was investigated as an additional independent variable. Over 85 percent of the variation in salaries across faculty members was explained by the model. The partial correlation with sex was found to be zero when control measures were considered. Since many departments had no women faculty members and at least one had no men faculty members, the departmental regression weights were compared with average salaries by rank for the same academic disciplines obtained from a nationwide salary study. These comparisons resulted in correlation coefficients of .75, .88, and .84 with average salaries for professors, associate professors, and assistant professors respectively. (Author/SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED161378



THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper is part of the ERIC Collection of 1978 Association for Institutional Research Forum Papers. All papers in the Collection were recommended for inclusion by the AIR Forum Publications Review Committee.

Robert H. Fenske
Arizona State University
(Editor, AIR Forum Publications)

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

AIR

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

HE 010 611

A Method for Monitoring University Faculty Salary Policies for Sex Bias

Larry O. Hunter

Director of Management
Information Services

University of Idaho

Moscow, Idaho 83843

(208) 885-7994

A Method for Monitoring University
Faculty Salary Policies for Sex Bias

Particularly during the past ten years many studies have reported on the use of multiple linear regression in the analysis of faculty salary differentials. This study uses data on all fulltime academic faculty at a state university, a relatively small institution for a land grant institution. A model was developed using rank, time in current rank, highest degree, administrative position, and academic department as independent variables and used to investigate the effect of sex as an additional independent variable. Over 85 percent of the variation in salaries across faculty members is explained by the model. The partial correlation with sex was found to be zero when controlled for the other independent variables listed above. Since many departments had no women faculty members and at least one had no men faculty members, the departmental regression weights were compared with average salaries by rank for the same academic disciplines obtained from a nationwide salary study. These comparisons resulted in correlation coefficients of .75, .88, and .84 with average salaries for professors, associate professors, and assistant professors respectively.

Overview

There is no formal salary schedule and the salaries are set by individual contract at the university studied. Most years salary increases are awarded in three or more categories such as "across the board", "merit", and "other adjustments". Initial salaries are set by negotiation and, until recently at least, no formal model such as the one used in this analysis was available for use in estimating an appropriate salary range for a particular set of credentials. Just three years earlier over one hundred thousand dollars in back pay and special adjustments had been awarded to women faculty members. However, a review of average salaries such as those in Table 1 raised a question as to whether inequity between salaries for men and women still existed.

Survey of the Literature

An increasing number of authors recommend the use of multiple linear regression in faculty salary policy analysis. Malkiel and Malkiel (1973, pp. 699-700) state the following:

> Gross differences in average salaries between men and women do not indicate the presence of discrimination. If women, on average, have less education and job experience than men, we should anticipate that their average salaries would be lower. Discrimination can be said to exist only if women with the same characteristics as men tend to receive lower salaries.

Many of these studies have dealt with sex discrimination in salary setting. They include studies on single institutions, studies on large numbers of institutions, and even international comparisons such as Blackstone and

TABLE 1

1976-77 Average Salaries for Fulltime Faculty Members by Sex and Rank

		Men	Women	Total
Professors	n	185	10	195
	$\bar{x}$	20,838	19,500	20,769
Associate Professors	n	155	13	168
	$\bar{x}$	16,451	16,049	16,420
Assistant Professors	n	103	27	130
	$\bar{x}$	14,153	13,084	13,931
Instructors	n	14	11	25
	$\bar{x}$	11,625	11,157	11,419
All Ranks	n	457	61	518
	$\bar{x}$	17,561	14,420	17,191

Fulton (1975). Most of them have reported a significant negative correlation between salary and being a woman faculty member even when controlling for all of the other independent variables that are significantly related to salary in their data. Many of them, for example, Bayer and Astin (1968), Astin and Bayer (1972), and Scott (1977) conclude that such findings are conservative estimates of the existing sex discrimination because some of the independent variable values such as rank are set by a process that may allow sex discrimination to be practiced in setting these values.

Development of the Model

Some previous analysis using multiple linear regression techniques had been done at the university being studied. Both 1975-76 faculty salaries and 1976-77 faculty salaries had been analyzed with a model using rank, years in current rank, highest degree, administrative responsibility, and academic college as independent variables. Statistics from this model for 1976-77 are shown in Table 2 as College Model. Results from a more abbreviated model, ignoring academic field altogether, confirmed that a significant portion of the differences in men and women's salaries indicated in Table 1 could be attributed to differences between salary levels in the academic colleges.

At about this time a State Commission on Human Rights in the same state as the university being studied took an official position that differences in salary levels between academic specialties did not violate equal pay for equal work regulations if a common practice of maintaining such a difference could be shown industry wide. In the case of the university this could be interpreted to mean salary differences between academic fields should be approximately the same as at similar universities

TABLE 2

Result of Multiple Linear Regression on Several Models Based on Rank, Years in Rank, Highest Degree, and Administrative Title

	R^2	S.D.	B Value for Men
No Field Model	.72	2617	516
College Model	.83	1547	237
Department Model Including Sex Variable	.86	1424	32
Department Model Without Sex Variable	.86	1423	20[a]

[a] B Value calculated using residuals from the Department Model Without Sex Variable as the dependent variable and Sex as the only independent variable.

across the country that employ faculty in the same fields. The model was altered by replacing the college variable (the university had eight colleges) with a department variable (the university had forty departments). The results of this analysis are also shown in Table 2. Essentially all of the variation in salaries related to sex can be attributed to other independent variables in this simple model.

Evaluation of the Department Differentials

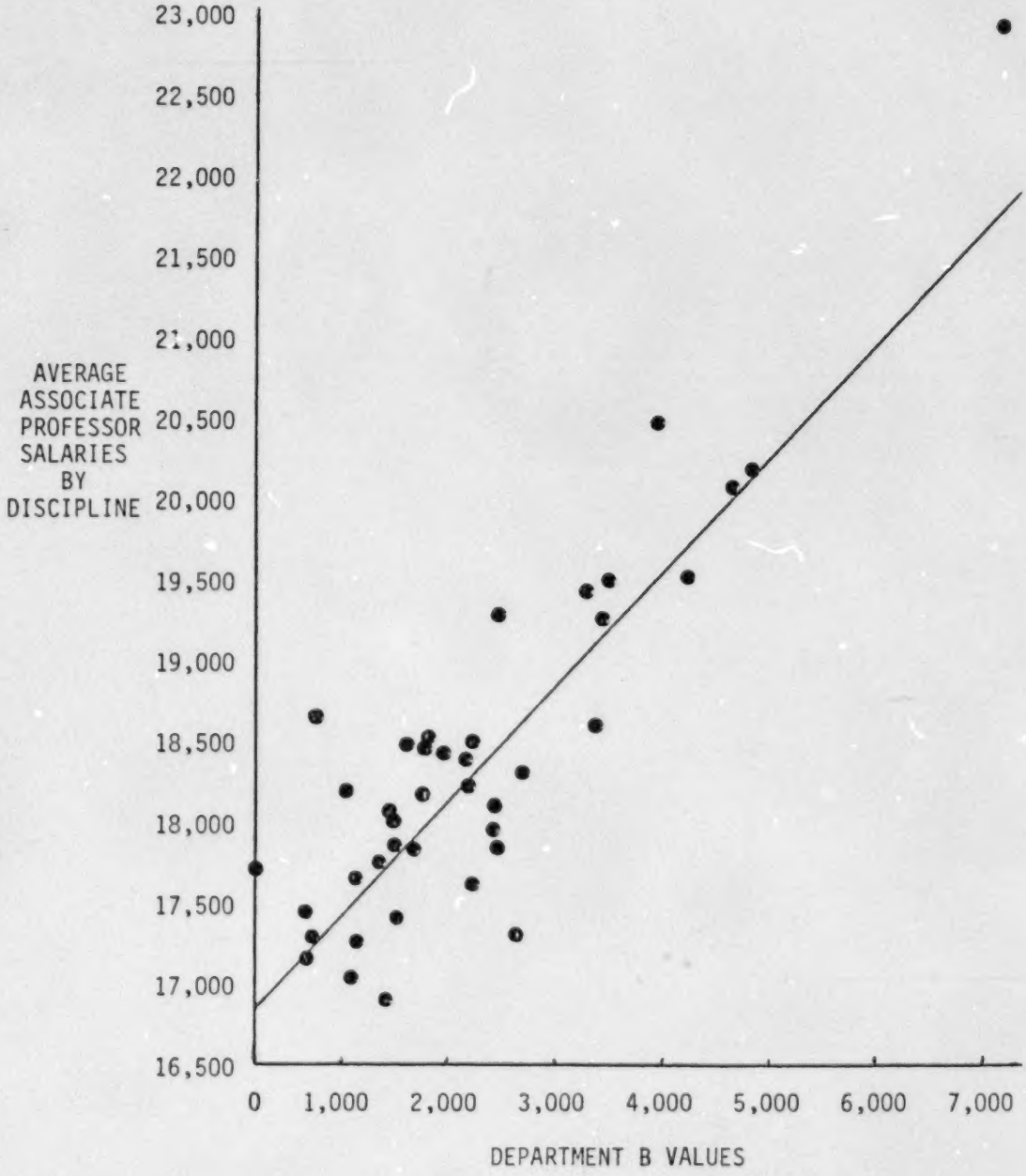
The university had been a regular participant in an annual faculty salary survey conducted by the Office of Institutional Research at Oklahoma State University. This survey collected and presented information on faculty salaries by academic discipline (department) and by academic rank. Most of the land grant institutions in the country were participants.

The average salaries from this study, Office of Institutional Research, Oklahoma State University (1977), for the forty disciplines most closely related to the university's forty departments were compared to the department weights from the model. Comparisons were made for average salaries from each of the ranks professor, associate professor, and assistant professor. The correlation coefficients from these comparisons were .75 with average salaries for the professor rank, .88 with average salaries at the associate professor rank, and .84 with average salaries at the assistant professor rank.

Figure 1 shows the distribution of the regression weights for university departments plotted against average salaries for associate professors from the survey. The university does not operate schools of medicine or veterinary medicine and it can be seen that a large number of the academic fields are bunched toward the lower end of the ranges for average salaries

FIGURE 1

B Values for the University Departments Plotted Against
Average Salaries from the 1976-77 OSU Salary Survey
For Associate Professors from Similar Disciplines



and for regression weights. Those on the upper ranges represent fields in the areas of engineering, business, and law. Those at the lower end include fields in the areas of arts and sciences, education, and agriculture and natural resources.

Summary

This analysis demonstrates that while women faculty at the university studied are paid lower salaries than men faculty essentially all of these differences can be accounted for by the regression model developed. The most important factors being the very small number of women represented in the higher paying ranks and higher paying academic disciplines. The university's treatment of differentials in salary between academic disciplines has been found to follow practices at a large number of similar institutions very closely.

The question of whether there is sex discrimination in the university's promotion and rank setting practices has not been addressed in this study but is being addressed separately in a broader context than salary implications alone. The only conclusion here is that if there are problems in this area any corrections or adjustments in academic rank would have to be accompanied by the appropriate adjustments in salary in order to maintain the balance described by the model used in this study.

REFERENCES

Astin, H.S., and Bayer, A.E. SEX DISCRIMINATION IN ACADEME. In Educational Record, 53, 1972, 101-118.

Bayer, A.E., and Astin, H.S. SEX DIFFERENCE IN ACADEMIC RANK AND SALARY AMONG SCIENCE DOCTORATES IN TEACHING. In Journal of Human Resource, 16, 1968,192-193.

Bayer, A.E. SEX DIFFERENTIALS IN THE ACADEMIC REWARD SYSTEM. In Science, 188, 1975, 796-802.

Beaumont, M.S. EFFICIENCY AND EQUITY: THE SINGLE SALARY SCHEDULE IN PUBLIC HIGHER EDUCATION. In AAUP Bulletin, 1978, 19-25.

Blackstone, T., and Fulton, O. SEX DISCRIMINATION AMONG UNIVERSITY TEACHERS: A BRITISH-AMERICAN COMPARISON. In British Journal of Sociology, 26, 1975, 261-275.

Gordon, N., Morton, T., and Braden, I. FACULTY SALARIES: IS THERE DISCRIMINATION BY SEX, RACE AND DISCIPLINE?. In American Economic Review, 64, 1974, 419-427.

Harris, A.S. THE SECOND SEX IN ACADEME. In AAUP Bulletin, 56, 1970, 283-295.

Johnson, G.E., and Stafford, F.P. THE EARNINGS AND PROMOTION OF WOMEN FACULTY. In American Economic Review, 64, 1974, 888-903

Malkiel, B. and Malkiel, J. MALE-FEMALE PAY DIFFERENTIALS IN PROFESSIONAL EMPLOYMENT. In American Economic Review, 63, 1973, 693-705.

McLaughlin, G.W., Smart, J.C., and Montg mery, J.R. FACTORS WHICH COMPRISE SALARY. Presented at the Association for Institutional Research Forum, 1977.

Nevill, D.D. ACHIEVING SALARY EQUITY. In Educational Record, 56, 1975, 266-270.

Office of Institutional Research, Oklahoma State University 1976-1977 FACULTY SALARY SURVEY BY DISCIPLINE. Vol 1. 1977.

Scott, E.L. HIGHER EDUCATION SALARY EVALUATION KIT. Washington, D.C.: American Association of University Professors, 1977.